

INCH-POUND

MIL-F-24787/1(SH)  
3 September 1993

## MILITARY SPECIFICATION

FITTINGS, END, TYPE F, FL, AND FFL, FLANGE, REUSABLE  
FOR FLEXIBLE HOSE ASSEMBLIES

This specification is approved for use by the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

## 1. SCOPE

1.1 Scope. This specification covers reusable flanged end fittings for use with wire or synthetic fiber reinforced rubber hose.

1.2 Classification. See MIL-F-24787 table III for identification of corresponding hose type (MIL-H-24135 and MIL-H-24136 specification sheet number) for each group number specified herein.

1.2.1 Flanges. Flanges shall be of the following classes, as specified (see 6.2).

- Class I - 400 psi in accordance with figure 1.
- Class II - 150/400 psi in accordance with figure 1.
- Class III - 250 psi in accordance with figure 1.
- Class IV - 150 psi in accordance with figure 1.
- Class V - 150 psi B16.5 in accordance with figure 1.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, SEA 03Q42, Naval Sea Systems Command, 2531 Jefferson Davis Hwy, Arlington, VA 22242-5160 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 4730

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

MIL-F-24787/1(SH)

1.2.2 Fitting group. The type F (straight nipple) type FL (90° elbow nipple) and type FFL (45° elbow nipple) end fitting shall be of one of the following groups, as specified (see 6.2).

- Group I - In accordance with figure 2.
- Group IV - In accordance with figure 3.
- Group V - In accordance with figure 4.
- Group VI - In accordance with figure 5.
- Group VII - In accordance with figure 6.
- Group VIII - In accordance with figure 7.
- Group IX - In accordance with figure 8.
- Group X - In accordance with figure 9.

## 2. APPLICABLE DOCUMENTS

### 2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

#### SPECIFICATIONS

##### FEDERAL

- QQ-C-390 - Copper Alloy Castings, (Including Cast Bar).
- QQ-N-281 - Nickel-Copper Alloy Bar, Rod, Sheet, Strip, Wire, Forgings, and Structural and Special Shaped Sections.
- QQ-N-286 - Nickel-Copper-Aluminum Alloy, Wrought (UNS N05500).
- QQ-N-288 - Nickel-Copper Alloy and Nickel-Copper-Silicon Alloy Castings.

##### MILITARY

- MIL-F-24787 - Fittings, End, Reusable for Flexible Hose Assemblies, General Specification for.
- MIL-T-1368 - Tube and Pipe, Nickel-Copper Alloy, Seamless and Welded.
- MIL-T-16420 - Tube, Copper-Nickel Alloy, Seamless and Welded (Copper Alloy Numbers 715 and 706).
- MIL-F-20042 - Flanges, Pipe and Bulkhead, Bronze (Silver Brazing).
- MIL-H-24135 - Hose Synthetic Rubber, Wire Reinforced, for Flexible Hose Assemblies, General Specification for.
- MIL-H-24136 - Hose, Synthetic Rubber, Synthetic Fiber Reinforced, for Flexible Hose Assemblies, General Specification for.
- MIL-B-24480 - Bronze, Nickel-Aluminum (UNS No. C95800) Castings for Sea Water Service.

(Unless otherwise indicated, copies of the federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

MIL-F-24787/1(SH)

2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of DoDISS cited in the solicitation. Unless otherwise specified, the issues of the documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

A 220 - Standard Specification for Pearlitic Malleable Castings.  
(DoD adopted).

A 582 - Standard Specification for Free-Machining Stainless and Heat-Resisting Steel Bars, Hot-Rolled or Cold Finished.  
(DoD adopted)

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

B16.5 - Steel Pipe Flanges and Flanged Fittings, including Ratings for Class 150, 300, 400, 600, 900, 1500, and 2500, 1977

(Application for copies should be addressed to the American National Standards Institute, 11 West 42nd Street, 13th Floor, New York, NY 10036.)

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

AMS 6381 - Steel Tubing, Mechanical 0.95Cr - 0.20Mo. (0.38 - 0.43C  
(SAE 4140). (DoD adopted)

(Application for copies should be addressed to the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096.)

(Non-Government standards and other publications are normally available from the organizations which prepare or which distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for related associated detail specifications, specification sheets, or MS standards), the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

### 3. REQUIREMENTS

3.1 Flanged fittings. Flanged fittings furnished under this specification shall conform to the requirements of MIL-F-24787 and as specified herein.

3.1.1' Dimensions. Flange dimensions shall conform to figure 1 and the tables thereon. Straight nipples for type F flanged fittings and 90° nipples for type FL flanged fittings shall conform to figure 2 and the tables thereon.

3.1.2 Fitting availability. Types F and FL flanged fittings are available in the groups and sizes indicated in table I.

MIL-F-24787/1(SH)

TABLE I. Flange fitting by group.

Fitting size (hose dash no.)	Fitting group										
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI
4	X							X			
5								X			
6	X							X			
8	X					X		X			
10	X					X		X			
12	X					X		X			
16	X					X		X			
20	X				X	X		X			
24	X				X	X		X			
32	X				X	X		X			
40				X						X	
48				X						X	
64				X						X	
80							X		X		
96							X		X		
128									X		
160									X		
192									X		

NOTE: X's denote where flanged end fittings are available by group and size.

3.2 Pressures. Flange pressures shall be as specified in 1.2.

#### 4. QUALITY ASSURANCE PROVISIONS

4.1 Quality assurance provisions shall be in accordance with MIL-F-24787.

MIL-F-24787/1(SH)

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection systems or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor or the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of the manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.3 Qualification. Flanged end fittings, because of their relatively low pressure ratings when compared to the rated pressures of the hoses upon which they are installed, shall not be subjected to qualification testing. They shall be considered qualified when end fittings of the same group, but rated for not less than the rated pressure of the applicable hose are qualified.

## 5. PACKAGING

5.1 Packaging requirements shall be in accordance with MIL-F-24787.

## 6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. End fittings to this specification are intended for use in shipboard or shore to ship piping systems where pressures do not exceed the flange rated working pressure, and temperatures do not exceed that of the applicable hose.

6.2 Acquisition requirements. Acquisition documents should specify the following:

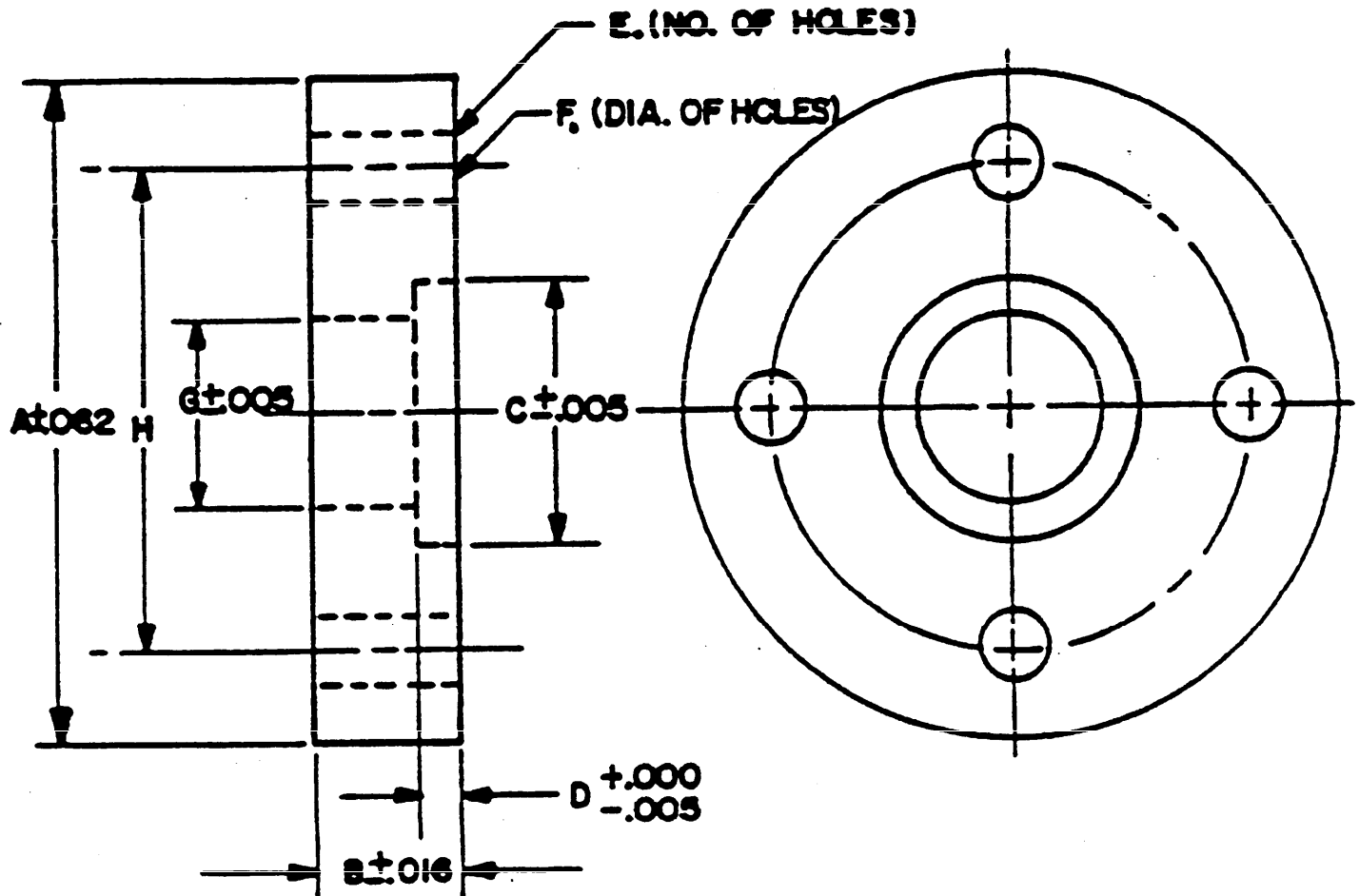
- (a) Title number and date of this specification
- (b) Fitting type, class, group and size (hose by pipe or tube)
- (c) Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
- (d) Quantity of fittings.

## 6.3 Subject term (key word) listing.

Synthetic fiber  
Wire

Preparing activity:  
Navy - SH  
(Project 4730-N086-1)

MIL-F-24787/1(SH)



- NOTES: 1. Dimensions are in inches.  
 2. See the following tables for detail dimensions.

Class	Table	Description
I	II	- 400 psi flange to MIL-F-20042
II	III	- 150 psi to flange MIL-F-20042 (with 400 psi flange thickness)
III	IV	- 250 psi flange to MIL-F-20042
IV	V	- 150 psi flange to MIL-F-20042
V	VI	- 150 psi flange to ANSI B16.5

3. Flanges in accordance with table III are for replacement purposes only and are not to be used in new construction.

FIGURE 1. Flange classes.

## MIL-F-24787/1(SH)

TABLE II. 400 psi flange (MIL-F-20042).

Hose dash size	-16			-20	-24	-32			-40
NPS size	1/2	3/4	1	3/4	1	1-1/4	1-1/2	2	2
A	4.000	4.312	5.062	4.312	5.062	5.375	5.938	6.500	6.500
B	0.687	0.687	0.750	0.687	0.750	0.812	0.812	0.812	0.812
C	1.515	1.515	1.515	1.859	2.140	2.765	2.765	2.765	3.296
D	0.235	0.235	0.235	0.235	0.270	0.270	0.270	0.270	0.270
E	4	4	5	4	5	5	6	7	7
F (nom)	0.562	0.562	0.688	0.562	0.688	0.688	0.688	0.688	0.688
G	1.375	1.375	1.375	1.688	1.938	2.562	2.562	2.562	3.062
H (nom)	2.875	3.188	3.750	3.188	3.750	4.062	4.625	5.188	5.188

Hose dash size	-40	-48		-64		-80	-96	-128	-160
NPS size	2-1/2	2-1/2	3	3-1/2	4	5	6	8	10
A	7.562	7.562	8.125	8.688	9.250	10.375	11.938	14.750	17.000
B	0.937	0.937	0.937	1.000	1.000	1.062	1.187	1.312	1.437
C	3.296	3.796	4.515	5.245	5.295	6.393	7.393	9.870	12.080
D	0.270	0.290	0.290	0.290	0.290	0.535	0.535	0.613	0.613
E	8	8	8	9	9	11	12	13	15
F (nom)	0.812	0.812	0.812	0.812	0.812	0.812	0.937	1.062	1.062
G	3.062	3.562	4.187	4.805	4.805	6.065	7.065	9.590	11.440
H (nom)	6.000	6.000	6.562	7.125	7.688	8.812	10.188	12.750	15.000

## MIL-F-24787/1(SH)

TABLE III. 150 psi flange (with 400 psi flange thickness) (MIL-F-20042).

Hose dash size	-16			-20	-24	-32			-40
NPS size	1/2	3/4	1	3/4	1	1-1/4	1-1/2	2	2
A	3.562	3.812	4.250	3.812	4.250	4.500	5.062	5.562	5.562
B	0.687	0.687	0.750	0.687	0.750	0.812	0.812	0.812	0.812
C	1.515	1.515	1.515	1.859	2.140	2.765	2.765	2.765	3.296
D	0.235	0.235	0.235	0.270	0.270	0.270	0.270	0.270	0.270
E	3	4	4	4	4	4	6	6	6
F (nom)	0.562	0.562	0.562	0.562	0.562	0.562	0.562	0.562	0.562
G	1.375	1.375	1.375	1.688	1.938	2.562	2.562	2.562	3.062
H (nom)	2.437	2.688	3.125	2.688	3.125	3.375	3.937	4.438	4.438

Hose dash size	-40	-48		-64		-80	-96	-128	-160	-192
NPS size	2-1/2	2-1/2	3	3-1/2	4	5	6	8	10	12
A	6.125	6.125	6.625	7.188	7.688	9.062	10.125	12.375	15.000	17.625
B	0.937	0.937	0.937	1.000	1.000	1.062	1.187	1.312	1.437	1.500
C	3.296	3.796	4.515	5.245	5.295	6.393	7.393	9.870	12.080	14.535
D	0.270	0.290	0.290	0.290	0.290	0.535	0.535	0.613	0.613	0.616 0.606
E	6	6	8	8	8	10	12	14	15	18
F (nom)	0.562	0.562	0.562	0.562	0.562	0.688	0.688	0.688	0.812	0.812
G	3.062	3.562	4.187	4.805	4.805	6.065	7.065	9.590	11.440	13.800
H (nom)	5.000	5.000	5.500	6.062	6.562	7.812	8.875	11.062	13.438	16.062



TABLE IV. 250 psi flange (MIL-F-20042).

Hose dash size	-16			-20	-24	-32			-40
NPS size	1/2	3/4	1	3/4	1	1-1/4	1-1/2	2	2
A	3.562	3.812	4.250	3.812	4.250	4.500	5.062	5.562	5.562
B	0.687	0.687	0.750	0.687	0.750	0.812	0.812	0.812	0.812
C	1.515	1.515	1.515	1.859	2.140	2.765	2.765	2.765	3.296
D	0.235	0.235	0.235	0.270	0.270	0.270	0.270	0.270	0.270
E	3	4	4	4	4	4	6	6	6
F (nom)	0.562	0.562	0.562	0.562	0.562	0.562	0.562	0.688	0.688
G	1.375	1.375	1.375	1.688	1.938	2.562	2.562	2.562	3.062
H (nom)	2.437	2.688	3.125	2.688	3.125	3.375	3.937	4.438	4.438

Hose dash size	-40	-48		-64		-80	-96	-128	-160	-192
NPS size	2-1/2	2-1/2	3	3-1/2	4	5	6	8	10	12
A	6.125	6.125	6.625	7.188	7.688	9.062	10.125	12.375	15.000	17.625
B	0.937	0.937	0.937	1.000	1.000	1.062	1.187	1.312	1.437	1.500
C	3.296	3.796	4.515	5.245	5.295	6.393	7.393	9.870	12.080	14.535
D	0.270	0.290	0.290	0.290	0.290	0.535	0.535	0.613	0.613	0.616 0.606
E	6	6	8	8	8	10	12	14	15	18
F (nom)	0.688	0.688	0.688	0.688	0.688	0.688	0.688	0.688	0.812	0.812
G	3.062	3.562	4.187	4.805	4.805	6.065	7.065	9.590	11.440	13.800
H (nom)	5.000	5.000	5.500	6.062	6.562	7.812	8.875	11.062	13.438	16.062

MIL-F-24787/1(SH)

TABLE V. 150 psi flange (MIL-F-20042).

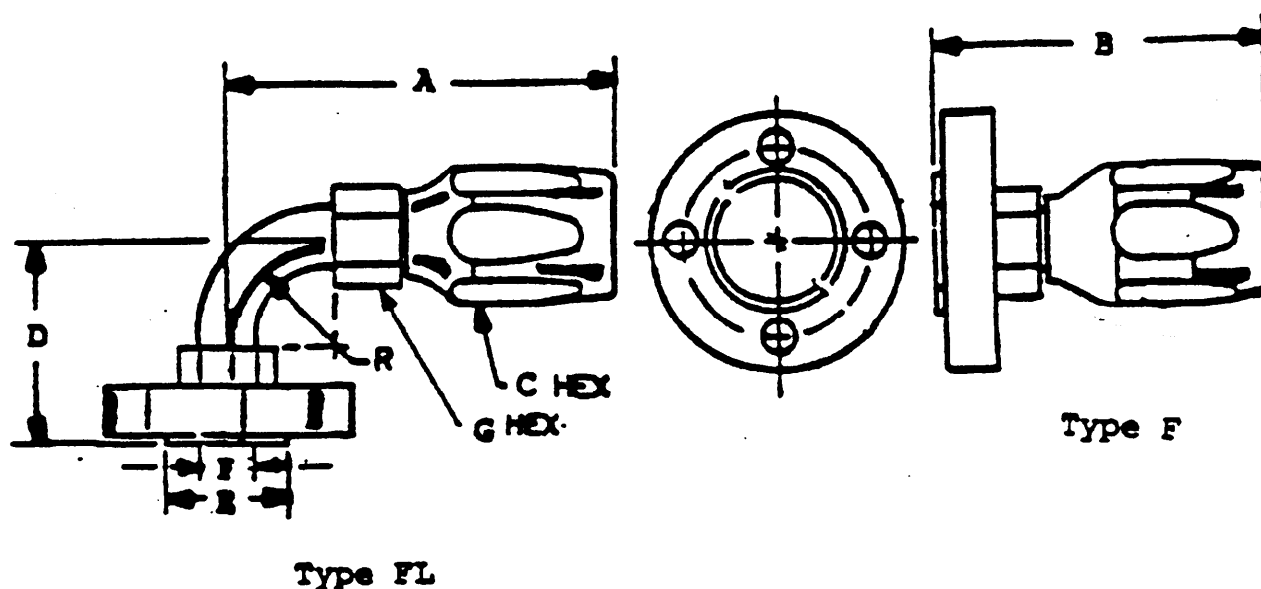
Hose dash size	-16			-20	-24	-32			-40
NPS size	1/2	3/4	1	3/4	1	1-1/4	1-1/2	2	2
A	3.562	3.812	4.250	3.812	4.250	4.500	5.062	5.562	5.562
B	0.375	0.438	0.438	0.438	0.438	0.438	0.438	0.438	0.438
C	1.515	1.515	1.515	1.859	2.140	2.765	2.765	2.765	3.296
D	0.235	0.235	0.235	0.235	0.270	0.270	0.270	0.270	0.270
E	3	4	4	4	4	4	6	6	6
F (nom)	0.562	0.562	0.562	0.562	0.562	0.562	0.562	0.562	0.562
G	1.375	1.375	1.375	1.688	1.938	2.562	2.562	2.562	3.062
H (nom)	2.437	2.688	3.125	2.688	3.125	3.375	3.940	4.438	4.438

Hose dash size	-40	-48		-64		-80	-96	-128	-160	-192
NPS size	2-1/2	2-1/2	3	3-1/2	4	5	6	8	10	12
A	6.125	6.125	6.625	7.188	7.688	9.062	10.125	12.375	15.000	17.625
B	0.500	0.500	0.500	0.500	0.500	0.562	0.562	0.625	0.687	0.750
C	3.296	3.796	4.515	5.245	5.295	6.393	7.393	9.870	12.080	14.535
D	0.270	0.290	0.290	0.290	0.290	0.535	0.535	0.613	0.613	0.616 0.606
E	6	6	8	8	8	10	12	14	15	18
F (nom)	0.562	0.562	0.562	0.562	0.562	0.688	0.688	0.688	0.812	0.812
G	3.062	3.562	4.187	4.805	4.805	6.065	7.065	9.590	11.440	13.800
H (nom)	5.000	5.000	5.500	6.062	6.562	7.812	8.875	11.062	13.438	16.062

TABLE VI. 150 psi flange (ANSI B16.5).

Hose dash size	-16			-20	-24	-32			-40
NPS size	1/2	3/4	1	3/4	1	1-1/4	1-1/2	2	2
A	3.500	3.875	4.250	3.875	4.250	4.625	5.000	6.000	6.000
B	0.359	0.422	0.422	0.422	0.422	0.422	0.422	0.422	0.422
C	1.515	1.515	1.515	1.859	2.140	2.765	2.765	2.765	3.296
D	0.235	0.235	0.235	0.235	0.270	0.270	0.270	0.270	0.270
E	4	4	4	4	4	4	4	4	4
F (nom)	0.625	0.625	0.625	0.625	0.625	0.625	0.625	0.750	0.750
G	1.375	1.375	1.375	1.688	1.938	2.562	2.562	2.562	3.062
H (nom)	2.437	2.688	3.125	2.688	3.125	3.375	3.940	4.438	4.438

Hose dash size	-40	-48		-64		-80	-96	-128	-160	-192
NPS size	2-1/2	2-1/2	3	3-1/2	4	5	6	8	10	12
A	7.000	7.000	7.500	8.500	9.000	10.000	11.000	13.500	16.000	19.000
B	0.482	0.484	0.484	0.484	0.484	1.046	1.172	1.296	1.422	1.484
C	3.296	3.796	4.515	5.245	5.295	6.393	7.393	9.870	12.080	14.535
D	0.270	0.290	0.290	0.290	0.290	0.535	0.535	0.613	0.613	0.616 0.606
E	4	4	4	8	8	8	8	8	12	12
F (nom)	0.750	0.750	0.750	0.750	0.750	0.875	0.875	0.875	1.000	1.000
G	3.062	3.562	4.187	4.805	4.805	6.065	7.065	9.590	11.440	13.800
H (nom)	5.500	5.500	6.000	7.000	7.500	8.500	9.500	11.750	14.250	17.000

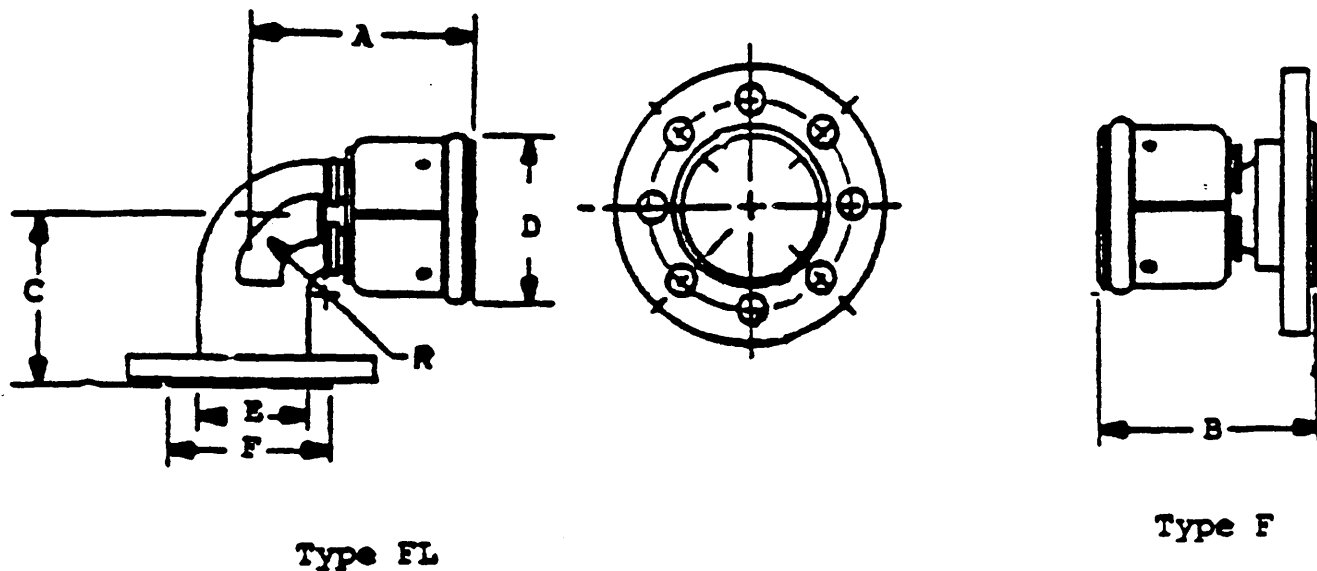


Hose size (dash no.)	NPS	A nom	B nom	C nom	D nom	E	F	G	R
-12	1/2	4.52	3.92	1.50	2.19	1.50	0.71	1.12	1.25
-16	3/4	5.25	4.34	1.81	2.49	1.84	0.92	1.38	1.50
-20	1	6.10	4.81	2.25	2.69	2.12	1.18	1.62	1.75
-24	1-1/4	6.31	4.97	2.50	3.13	2.74	1.53	2.12	2.00
-32	1-1/2	7.38	5.33	3.00	3.00	2.74	1.77	2.25	2.50
-32	2	7.38	5.33	3.00	3.35	3.28	1.77	2.69	2.50

## NOTES:

1. Dimensions are in inches.
2. Fitting assembly materials for flange, shoulder, hose nipple and socket shall conform to QQ-N-281 or QQ-N-286.
3. The 90° tube elbow material for size -12 fitting shall conform to MIL-T-1368, and for sizes -16 through -32 to MIL-T-16420.
4. The material for the flange may conform to QQ-C-390, alloy C90300.
5. Socket (body) material alternative may conform to QQ-N-288, composition B.
6. The flange shall be designed to swivel through 360 degrees and shall be dimensioned in accordance with figure 1 for the appropriate flange class.
7. The socket shall be a one-piece design.

FIGURE 2. Group I, flange to hose, type F (straight) and type FL (90° elbow).



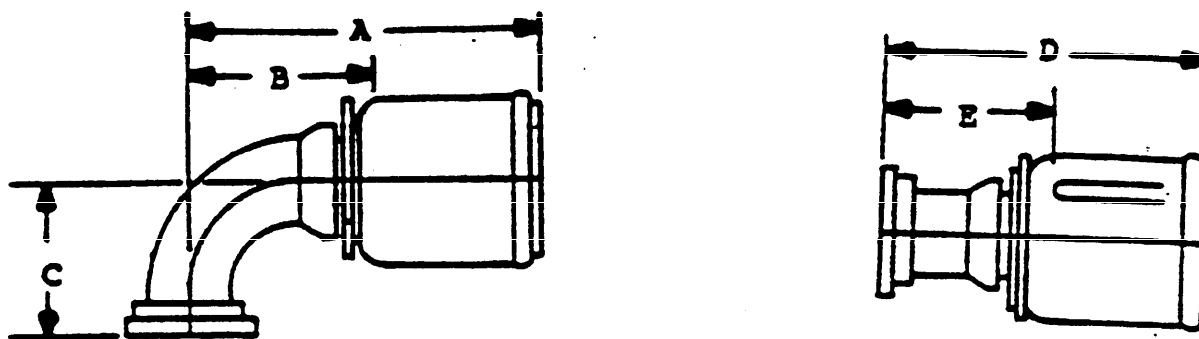
Hose size (dash no.)	NPS	A nom	B nom	C nom	D max	D <sub>1</sub> Bolted max	E	F	R
-40	2	5.70	5.16	3.50	3.90	6.75	2.24	3.28	1.88
-40	2-1/2	5.70	5.16	3.50	3.90	6.75	2.24	3.28	1.88
-48	2-1/2	5.96	5.17	4.00	4.50	7.75	2.71	3.78	2.09
-48	3	5.96	5.17	4.00	4.50	7.75	3.31	4.50	2.09
-64	3-1/2	6.75	5.54	4.62	5.44	9.00	3.81	5.22	2.81
-64	4	6.75	5.54	4.62	5.44	9.00	4.28	5.22	2.81

## NOTES:

1. Dimensions are in inches.
2. Hose nipple material shall be bronze to MIL-B-24480.
3. Socket assembly may be the multiple segment type, bolt or ring retained, so long as the envelope dimensions are not exceeded. Material may be bronze to MIL-B-24480 or conform to QQ-N-281, class A or B, QQ-N-286 or QQ-N-288, composition B.
4. Flange material shall be bronze to QQ-C-390, alloy number C90300.
5. Flange shall be designed to swivel through 360 degrees and shall be dimensioned in accordance with figure 1 for the appropriate flange class.

FIGURE 3. Group IV. flange to hose. type F (straight) and type FL (90° elbow).

MIL-F-24787/1(SH)

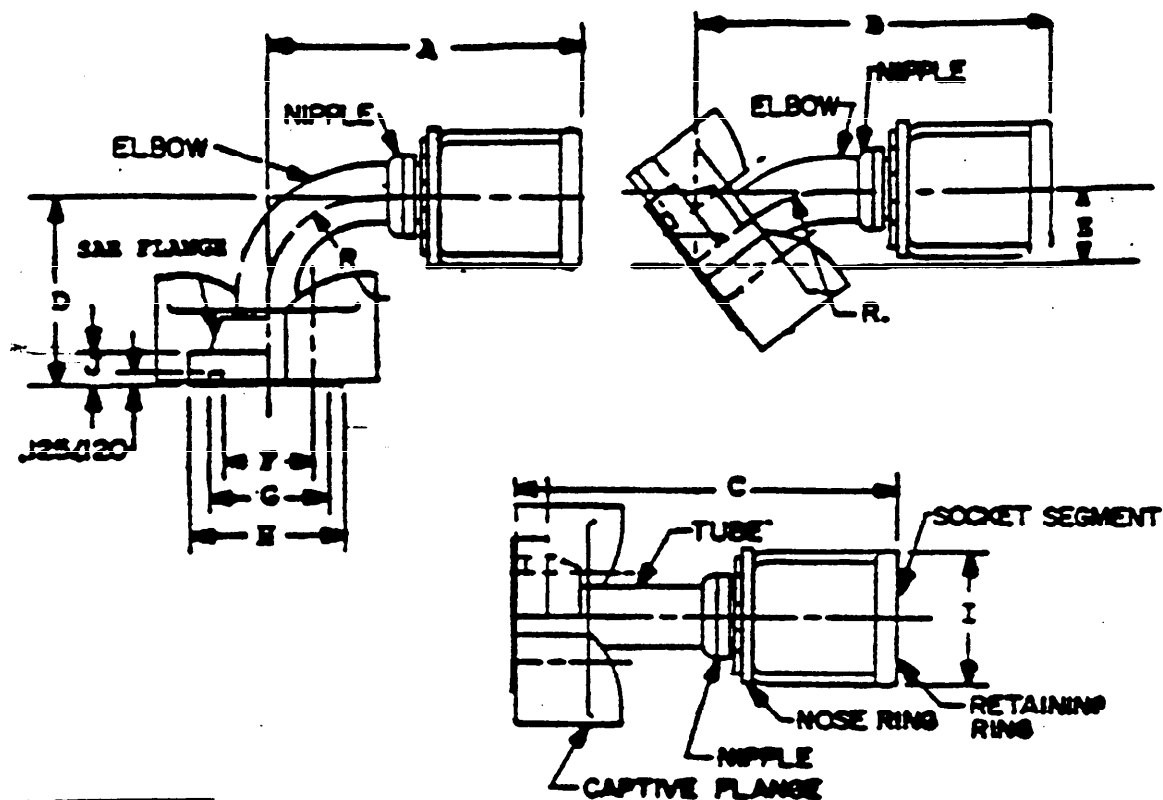
**Type FL****Type F**

Hose size (dash no.)	Flange head size	A max	B ref	C ref	D max	E ref
-20	-20	5.85	3.37	2.62	5.29	2.67
-24	-24	6.76	3.95	3.12	5.81	2.84
-32	-32	9.02	5.69	4.38	6.30	2.90

**NOTES:**

1. Dimensions are in inches
2. Fitting material shall conform to ASTM A 582, type 303, condition A.

**FIGURE 4. Group V. flange to hose. type F (straight) and type FL (90° elbow).**



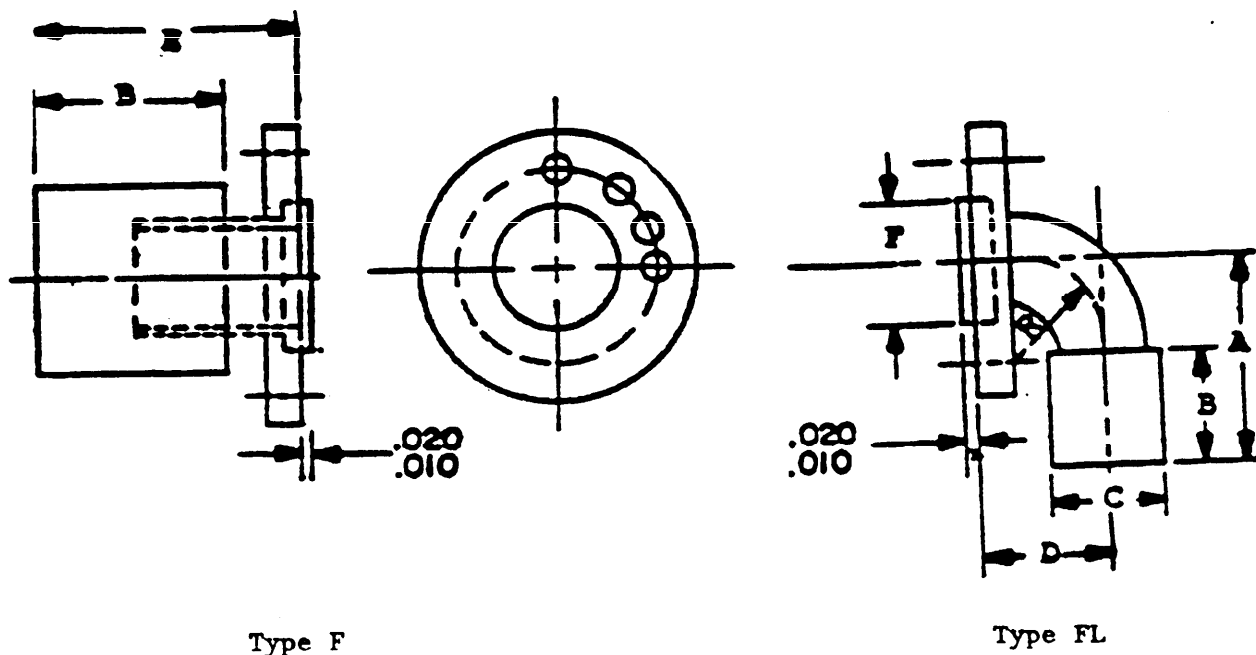
Size												
Od tube	SAE Flange & hose	A max	B max	C max	D nom	E nom	F nom	G nom	H nom	I max	J nom	R
1-1/4	-20	6.44	7.34	6.68	2.68	1.96	1.422	1.752	2.125	2.88	0.405	1.75
1-1/2	-24	7.25	7.65	7.14	3.19	2.06	1.790	2.120	2.500	3.16	0.495	2.00
2	-32	8.95	8.94	9.33	4.56	3.31	2.165	2.495	3.125	3.75	0.495	3.00

## NOTES:

1. Dimensions are in inches.
2. Fitting assembly materials for the hose nipple shall conform to QQ-N-281 or QQ-N-286.
3. Socket for fitting assemblies for -20 hose and larger may be the one piece or multiple segment design, not exceeding the envelope dimensions.
4. Fitting assembly materials for the socket shall conform to QQ-N-281, QQ-N-286 or QQ-N-288, composition B.
5. Alternate material for the fitting assembly socket for hose sizes -20 and larger shall be steel conforming to AISI-SAE 4140 in accordance with AMS 6381, as applicable.
6. Tubing shall conform to MIL-T-16420.
7. Captive flange material shall be malleable iron in accordance with ASTM A 220.

FIGURE 5. Group VI. flange to hose, type F (straight), type FL (90° elbow) and type FFL (45° elbow), SAE J518c.

MIL-F-24787/1(SH)



Hose size (in)	A	B	C	D	E	F	R
5	10.78	5.90	8.45	5.05	7.30	6.37	4.50
6	11.08	5.89	9.41	5.67	7.30	7.37	4.75

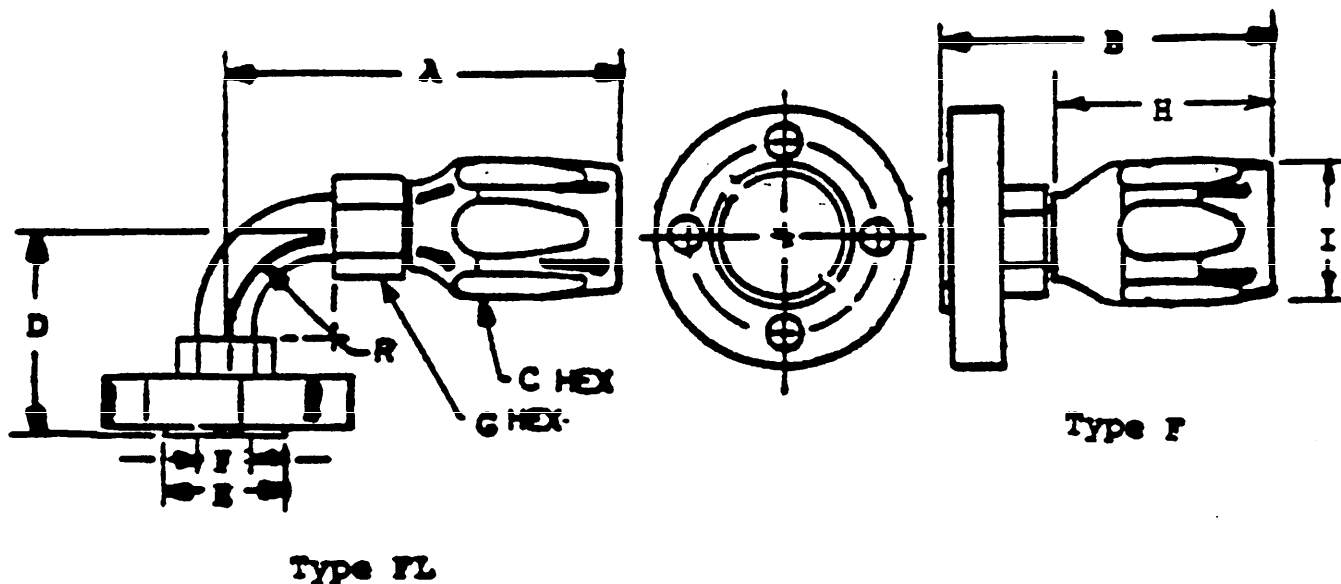
## NOTES:

1. Dimensions are in inches.
2. Socket may be multiple segment type.
3. Socket and nipple shall be bronze to MIL-B-24480.
4. Flange shall be bronze to QQ-C-390, alloy no. C90300.
5. Flange shall be designed to swivel freely through 360 degrees and shall be dimensioned in accordance with figure 1 for the appropriate flange class.

FIGURE 6. Group VII, hose to flange, type F (straight) and type FL (90° elbow).



MIL-F-24787/1(SH)



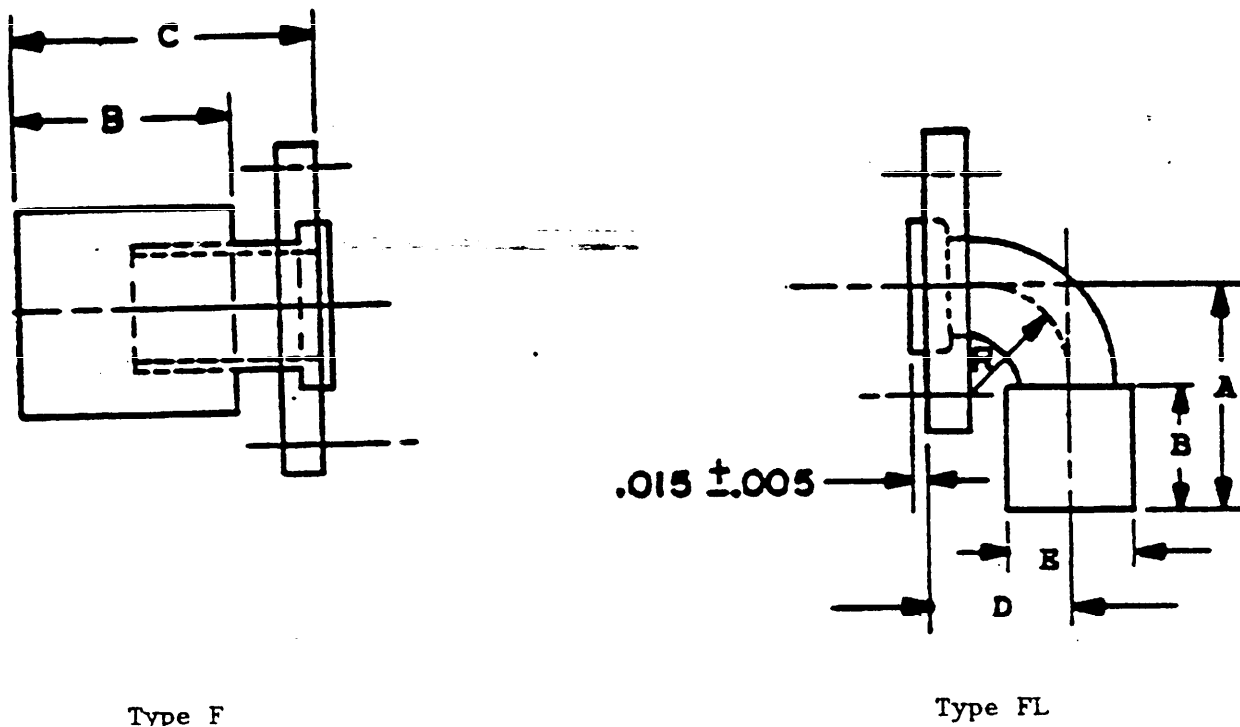
Hose size	NPS	A	B	C	D	E	F	G	H	I	R
(dash no.)		nom	nom	nom	nom	nom	nom		see note 7		
-16	1/2	2.80	2.80	1.44	2.38	1.50	0.71	1.38	1.66	1.53	1.12
-16	3/4	2.80	2.80	1.44	2.38	1.50	0.71	1.38	1.66	1.53	1.12
-16	1	2.80	2.80	1.44	2.38	1.50	0.71	1.38	1.66	1.53	1.12
-20	3/4	2.98	2.89	1.75	2.56	1.84	0.92	1.62	1.75	1.62	1.22
-24	1	3.24	2.92	1.94	2.75	2.12	1.18	2.12	1.84	1.78	1.38
-32	1-1/4	3.89	3.51	2.44	3.06	2.74	1.53	2.25	2.25	2.05	1.62
-32	1-1/2	3.89	3.51	2.44	3.06	2.74	1.77	2.25	2.25	2.05	1.62
-32	2	3.89	3.51	2.44	3.06	2.74	1.75	2.69	2.25	2.05	1.62

## NOTES:

1. Dimensions are in inches.
2. Fitting assembly materials for flange, shoulder, hose nipple and socket shall conform to QQ-N-281 or QQ-N-286.
3. The 90° tube elbow material shall conform to MIL-T-16420.
4. The material for the flange may conform to QQ-C-390, alloy C90300.
5. Socket (body) material alternative may conform to QQ-N-288, composition B. Socket may be one piece or segmented.
6. The flange shall be designed to swivel through 360 degrees and shall be dimensioned in accordance with figure 1 for the appropriate flange class.
7. Dimensions H and I are nominal dimensions for bolt together type segments.

FIGURE 7. Group VIII. flange to hose, type F (straight) and type FL (90° elbow).

MIL-F-24787/1(SH)



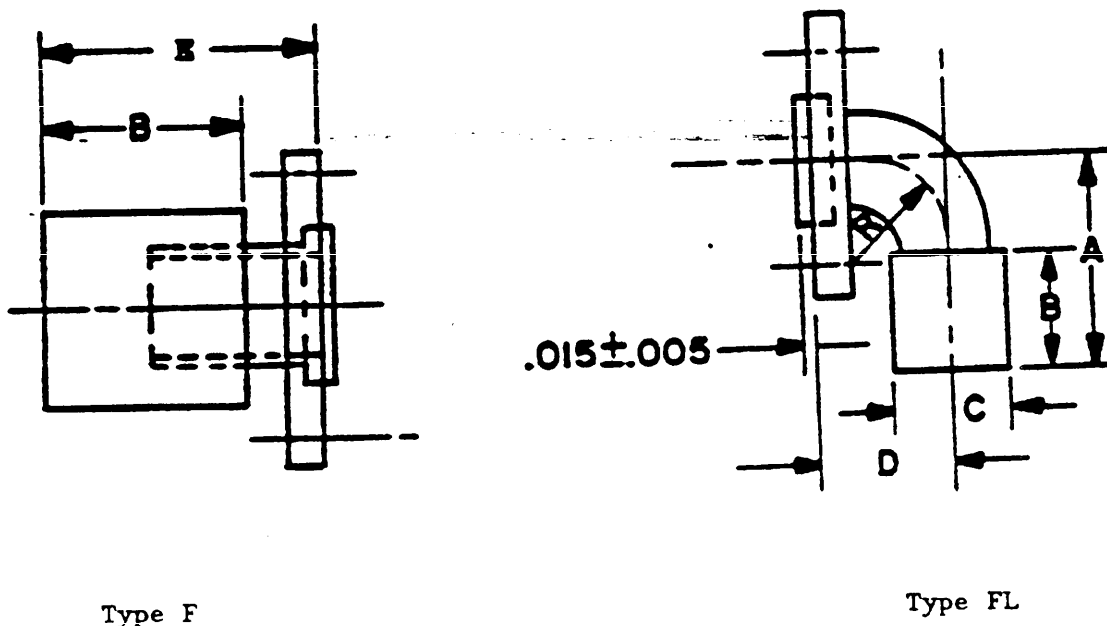
Hose size (dash no.)	A	B	C nom	D	E	R
-80	8.64	5.00	6.75	6.81	11.50	3.50
-96	9.14	5.00	6.75	7.31	12.00	4.00
-128	10.34	5.00	7.00	8.81	14.00	5.00
-160	11.89	5.00	7.01	9.70	16.50	6.38
-192	14.24	6.50	8.49	10.70	20.00	7.38

## NOTES:

1. Dimensions are in inches.
2. Parts in contact with sea water shall be bronze in accordance with MIL-B-24480. All fasteners shall be of QQ-N-281 or QQ-N-286.
3. Flange shall be MIL-B-24480 or QQ-C-390.
4. Flange shall be designed to swivel through 360 degrees and shall be dimensioned in accordance with figure 1 for the appropriate flange class.

FIGURE 8. Group IX, flange to hose, type F (straight) and type FL (90° elbow).

MIL-F-24787/1(SH)



Hose size (dash no.)	A nom	B	C	D	E nom	R
-40	6.25	5.00	6.75	4.50	5.75	2.13
-48	6.88	5.00	7.75	5.00	5.88	2.50
-64	7.00	5.00	9.00	5.57	6.00	3.00

## NOTES:

1. Dimensions are in inches.
2. Parts in contact with sea water shall be bronze in accordance with MIL-B-24480. All fasteners shall be of QQ-N-281 or QQ-N-286.
3. Flange shall be MIL-B-24480 or QQ-C-390.
4. Flange shall be designed to swivel through 360 degrees and shall be dimensioned in accordance with figure 1 for the appropriate flange class.

FIGURE 9. Group X, flange to hose, type F (straight) and type FL (90° elbow).

## STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

## INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the comment number and revision letter should be given.
  2. The submitter of this form must complete blocks 4, 5, 6, and 7.
  3. The preparing activity must provide a reply within 30 days from receipt of this form.
- NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:

1. DOCUMENT NUMBER

MIL-F-24787/1(SH)

2. DOCUMENT DATE (YYMMDD)

930903

3. DOCUMENT TITLE

FITTINGS, END, TYPE F, FL, AND FFL, FLANGE, REUSABLE FOR FLEXIBLE HOSE ASSEMBLIES

4. NATURE OF CHANGE (identity paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)

b. ORGANIZATION

c. ADDRESS (Include Zip Code)

d. TELEPHONE (Include Area Code)

7. DATE SUBMITTED (YYMMDD)

(1) Commercial

(2) DSN

(If applicable)

8. PREPARING ACTIVITY

a. NAME Technical Point of Contact (TPOC)

MR. CARL BANKS, SEA 03Y23

ADDRESS ALL CORRESPONDENCE AS FOLLOWS:

b. TELEPHONE (Include Area Code)

(1) Commercial:

DSN:

TPOC: 703-602-0367

8-332-0367

c. ADDRESS (Include Zip Code)

COMMANDER, NAVAL SEA SYSTEMS COMMAND

ATTN: SEA 03Q42

2531 JEFFERSON DAVIS HIGHWAY

Arlington, VA 22242-5160

IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:

Defense Quality and Standardization Office

5203 Leesburg Pike, Suite 1403

Falls Church, VA 22041-3466

Telephone 703-756-2340 DSN 289-2340

D. JRM 1426, OCT 89

Previous editions are obsolete.

198/290